ABSTRACT OF THE DISCLOSURE

An apparatus for and a method of motion vector estimation which shortens a time of motion vector estimation. Vertical motion vectors of a second frame are calculated with reference to a first frame. Vertical reference positions are decided when calculating horizontal motion vectors of the second frame according to the vertical motion vectors. Horizontal motion vectors of the second frame are calculated in lines according to the decided vertical reference positions. When calculating motion vectors from the first frame and the subsequent second frame, calculation speed is increased by calculating vertical motion vectors first and reducing calculation amounts of horizontal motion vectors based on the vertical motion vector calculations.